

IN THE CLAIMS:

The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

1. (currently amended): An information processing method for setting an exclusive control right of a data item by a specific process in a system in which a plurality of processes that can communicate with each other via an information transmission medium share data including a plurality of data items by use of a data structure which has a hierarchy structure having a data item corresponding to an operational object as a root and describes a structural dependence of the virtual space,

wherein each of the plurality of data items has type information indicating that the respective data item belongs to a first type in which an exclusive control right is set to the specific process for the data item and all data items belonging to a lower layer of the data item when no exclusive control right is set for the data item and all data items or a second type in which the exclusive control right is set to the specific process for data items for which no exclusive control right is set, of the designated data item and all data items belonging to a lower layer of the data item, and wherein, when the first type is indicated by the type information, an exclusive control right is set to the specific process for the data item and all data items belonging to a lower layer of the data item when no exclusive control right is set for the data item and all data items, and wherein, when the second type is indicated by the type information, the exclusive control right is set to the specific process for data items for which no exclusive control right is set, of the designated data item and all data items belonging to a lower layer of the data item, said method comprising:

a first designation step of designating a data item for which the exclusive control right is to be set;

a retrieval step of retrieving a data item which belongs to a lower layer of the data item designated in said first designation step on the basis of hierarchical structure information of the plurality of data items;

a determination step of determining whether or not an exclusive control right by another process is set, for each data item retrieved in said retrieval step;

a setting step of:

when the designated data item is indicated as the first type by the type information, setting the exclusive control right for the specific process as to the designated data item and as to a retrieved data item retrieved in said retrieval step only if no exclusive control right is set by other process for the designated data item and all of the retrieved data items, and not setting the exclusive control right for the specific process as to all of the designated data items and a retrieved data item in said retrieval step if the exclusive control right is set by another process for at least one of the designated data items and all of the retrieved data items; and

when the designated data item is indicated as the second type by the type information, setting the exclusive control right for the specific process as to the designated data item and as to the data items for which it is determined in said determination step that an exclusive control right by another process is not set;

a second designation step of designating a data item for which the exclusive control right is to be released; and

a first release step of releasing the exclusive control right of the specific process as to the data item designated in said second designation step and a data item which

belongs to a lower layer of the data item designated in said second designation step, while maintaining the exclusive control right of the specific process as to a data item which belongs to an upper layer of the data item designated in said second designation step.

2.- 10. (canceled).

11. (currently amended): An information processing apparatus for setting an exclusive control right of a data item by a specific process in a system in which a plurality of processes that can communicate with each other via an information transmission medium share data including a plurality of data items by use of a data structure which has a hierarchy structure having a data item corresponding to an operational object as a root and describes a structural dependence of the virtual space,

wherein each of the plurality of said data items has type information indicating that the data item belongs to a first type in which an exclusive control right is set to the specific process for the data item and all data items belonging to a lower layer of the data item when no exclusive control right is set for the data item and all data items or a second type in which the exclusive control right is set to the specific process for data items for which no exclusive control right is set, of the designated data item and all data items belonging to a lower layer of the data item, and wherein, when the first type is indicated by the type information, an exclusive control right is set to the specific process for the data item and all data items belonging to a lower layer of the data item when no exclusive control right is set for the data item and all data items, and wherein, when the second type is indicated by the type information, the exclusive control right is set to the specific process for data items for which no exclusive control right is set, of the

designated data item and all data items belonging to a lower layer of the data item, said apparatus comprising:

a holding unit for holding hierarchical structure information of the plurality of data items;

a first designation unit for designating a data item for which the exclusive control right is to be set;

a setting unit for setting, when the first type is indicated by the type information, the exclusive control right to the specific process for the data item and all data items belonging to a lower layer of the data item when no exclusive control right is set for the data item and all data items, and, not setting the exclusive control right for the specific process as to all of the designated items and retrieved data item if the exclusive control right is set by another process for at least one of the designated data items and all of the retrieved data items; and

when the second type is indicated by the type information, setting the exclusive control right to the specific process for data items for which no exclusive control right is set, of the designated data item and all data items belonging to a lower layer of the data item;

a second designation unit for designating a data item for which the exclusive control right is to be released; and

a first release unit for releasing the exclusive control right of the specific process as to the data item designated by said second designation unit and a data item which belongs to a lower layer of the data item designated by said second designation unit, while maintaining the exclusive control right of the specific process as to a data item which belongs to an upper layer of the data item designated by said second designation unit.

12. (previously presented): A control program stored in a computer-readable storage medium for making a computer execute an information processing method of claim 1.

13. (original): A storage medium storing a control program for making a computer execute an information processing method of claim 1.

14.- 17. (canceled).